

**WHAT IS CLAIMED IS:**

1. A desoldering tool having a tip for melting solder and retrieving the melted solder through the tip, the desoldering tool comprising:

a storage adapted to retain the melted solder;

a first handle adapted to couple to a vacuum source and provide a passage within the first handle to convey the vacuum source to the tip to retrieve the melted solder, the first handle having a cavity adapted to releaseably receive the storage to retain the melted solder retrieved through the tip; and

a second handle adapted to releaseably couple to the first handle in a tangential manner.

2. The desoldering tool according to claim 1, where the first handle has a front end with first and second openings, and further including a heater cartridge having a leading section in a staggered relationship with an electrical cartridge, where the first and second openings are adapted to receive at least a portion of the leading section and the electrical cartridge, respectively.

3. The desoldering tool according to claim 2, where the front end has at least one notch adapted to receive a tooth protruding from the heater cartridge to align the heater cartridge to the first handle.

4. The desoldering tool according to claim 1, where the first handle has a back holder adapted to move between a first position and a second position, where in the first position the longitudinal length of the cavity is longer than the length of the storage to allow the storage to be inserted or removed from the cavity, where in the second position the length of the cavity is at least equal to the length of the storage to hold the storage within the cavity.

5. The desoldering tool according to claim 4, where the storage has a first end and a second end and further including first and second seal members within the cavity adapted to substantially seal the first and second ends of the storage within the cavity in the second position.

6. The desoldering tool according to claim 5, where the first seal member and second seal member each has a bevel edge along its outer edge.

7. The desoldering tool according to claim 5, where the second seal member is releaseably coupled to the back holder, where the second end of the storage has a divot adapted to receive a key formed on the second seal member when the back holder is in the second position.

8. The desoldering tool according to claim 4, where the storage has a divot adapted to receive a key when the back holder is moved from the first position to the second position to orient the storage relative to the first handle.

9. The desoldering tool according to claim 2, further including a power line coupled to the first handle to provide power to the leading section to convert the power to heat for heating the tip.

10. The desoldering tool according to claim 1, further including a heater cartridge having a channel adapted to retrieve the melted solder therethrough, where the longitudinal axis of the channel is substantially aligned with a longitudinal axis of the passage.

11. The desoldering tool according to claim 9, where the first handle has a first trigger and the second handle has a second trigger, when the second handle is releaseably coupled to the first handle, the second trigger is mechanically coupled to the first handle so that actuation of the second trigger actuates the first trigger to provide vacuum source to the tip.

12. A system for melting solders with a tip and removing the melted solder through the tip, the system comprising:

a first handle coupled to a power line to provide power to a heater to convert the power to heat near the tip to melt the solder and having a first trigger to control a vacuum source to the tip; and

a second handle adapted to releaseably couple to the first handle in a tangential manner, the second handle having a second trigger that is mechanically coupled to the first trigger when the second handle is coupled to the first handle such that actuation of the second trigger causes the first trigger to turn on or off a vacuum source to the tip for removing the melted solder through the tip.

13. The system according to claim 12, further including a storage capable of retaining the melted solder retrieved through the tip, where the first handle is adapted to couple to the vacuum source and provide a passage within the first handle to provide the vacuum source to the tip to retrieve the melted solder, the first handle having a cavity adapted to releaseably receive the storage to retain the melted solder retrieved through the tip.

14. The system according to claim 13, where the first handle has a front end with a first opening, and further including a leading section with a channel adapted to retrieve the melted solder therethrough and the longitudinal axis of the channel is substantially aligned with the longitudinal axis of the passage.

15. The system according to claim 12, where the first handle has a front end with first and second openings, and further including a heater cartridge having a leading section in a staggered relationship with an electrical cartridge, where the first and second openings are adapted to receive at least a portion of the leading section and the electrical cartridge, respectively.

16. The system according to claim 15, further including a heater cartridge remover adapted to associate with the heater cartridge to remove the heater cartridge from the first handle.

17. The system according to claim 16, where the heater cartridge remover is adapted to associate with an underside of the heater cartridge.

18. The system according to claim 13, where the first handle has a back holder adapted to move between a first position and a second position, where in the first position the longitudinal length of the cavity is longer than the length of the storage to allow the storage to be inserted or removed from the cavity, where in the second position the length of the cavity is at least equal to the length of the storage to engage the storage within the cavity.

19. The system according to claim 13, where the storage has a first end and a second end and further including first and second seal members within the cavity adapted to substantially seal the first and second ends of the storage within the cavity in the second position.

20. The system according to claim 19, where the second seal member is releaseably coupled to the back holder, where the second end of the storage has a divot adapted to receive a key formed on the second seal when the back holder is in the second position.

21. The system according to claim 13, where the storage has a divot adapted to receive a key when the back holder is moved from the first position to the second position to orient the storage relative to the first handle.

22. The system according to claim 15, further including a power line coupled to the first handle to provide power to the heater within the leading section to convert the power to heat for heating the tip.

23. The system according to claim 12, further including a heater cartridge having a channel adapted to retrieve the melted solder therethrough, where the longitudinal axis of the channel is substantially aligned with a longitudinal axis of the passage.

24. The system according to claim 22, where the first handle has a first trigger and the second handle has a second trigger, when the second handle is releaseably coupled to the first handle, the second trigger is mechanically coupled to the first handle so that actuation of the second trigger actuates the first trigger to provide vacuum source to the tip.

25. The system according to claim 23, where the second handle includes a pin that is adapted to move between a first position and a second position, where in the first position the pin protrudes from the second handle and in the second position the pin is recessed within the second handle, where the pin is sized to fit inside the channel for cleaning.

26. The system according to claim 23, further including a heater cartridge remover adapted to engage with the heater cartridge to remove the heater cartridge from the first handle.

27. The system according to claim 12, further including a desoldering control box capable of delaying providing the vacuum source to the tip.

28. The system according to claim 12, further including a heater cartridge having a transition section adapted to couple a leading section and an electrical cartridge in a staggered manner, where the transition section has a sleeve protruding from one side adapted to receive an

electrical cartridge and an pipe end of the leading section protruding from the same side of the transition section, where the pipe end and the sleeve are adapted to insert into first and second openings of the first handle, respectively, with the sleeve engaging with the second opening before the pipe end engages with the first opening to orient the heater cartridge relative to the first handle.

29. The system according to claim 28, where the sleeve has a cavity adapted to engage with a hinge within the second opening to substantially prevent the heater cartridge from disengaging with the first handle.

30. The system according to claim 29, where the hinge is coupled to a button when activated causes the hinge to release the sleeve to disengage the heater cartridge from the first handle.

31. A system for retaining melted solder, the system comprising:

a housing having a first end and a second end, where the first end of the housing is adapted to receive the melted solder;

a filter adapted to releaseably fit within the second end of the housing; and

a radiating member having a base between a pair of legs, where the radiating member is adapted to fit within the housing with the base adjacent to the filter.

32. The system according to claim 31, where the second end of the housing has a divot to orient the housing along the radial direction.

33. The system according to claim 31, where the radiating member has a U-shape.

34. The system according to claim 31, where the base is flush with the filter.

35. The system according to claim 31, where between the base and the filter is a gap.

36. The system according to claim 31, where the base has a V-shape.

37. The system according to claim 31, where the base has a W-shape.

38. The system according to claim 31, where the radiating member is formed from metal.

39. The system according to claim 38, where the metal is aluminum.
40. The system according to claim 31, where the diagonal distance of the base is substantially similar to the inner diameter of the housing.
41. The system according to claim 31, where the pair of legs are substantially planar.
42. The system according to claim 31, where the housing is formed from a transparent material for detecting from outside of the housing the amount of solder within the housing.
43. The system according to claim 31, where the housing is made of paper.
44. A system for retaining melted solder, the system comprising:
- a housing having a first end and a second end, where the first end of the housing is adapted to receive the melted solder;
  - a filter adapted to releaseably fit within the second end of the housing; and
  - a radiating member having a curved configuration within the housing.
45. The system according to claim 44, where the radiating member is formed from aluminum.
46. The system according to claim 44, where the housing is made of paper.
47. A replaceable solder storage for a desoldering tool, the storage comprising:
- a housing having a first end and a second end, where the first end of the housing is adapted to receive the melted solder;
  - a filter within the second end of the housing; and
  - a radiating member having a base between a pair of legs, where the pair of legs is substantially planer with an open space between the pair of legs, and the radiating member is within the housing with the base adjacent to the filter.

48. The storage according to claim 47, where the second end of the housing has a divot to orient the housing along the radial direction.

49. The storage according to claim 47, where the radiating member has a U-shape.

50. The storage according to claim 47, where the base is flush with the filter.

51. The storage according to claim 47, where between the base and the filter is a gap.

52. The storage according to claim 47, where the base has a V-shape.

53. The storage according to claim 47, where the base has a W-shape.

54. The storage according to claim 47, where the radiating member is formed from metal.

55. The storage according to claim 54, where the metal is aluminum.

56. The storage according to claim 47, where the diagonal distance of the base is substantially similar to the inner diameter of the housing.

57. The storage according to claim 47, where the housing is formed from a transparent material for detecting the amount of solder within the housing.

58. The storage according to claim 47, where the housing is made of paper.

59. A heater cartridge adapted to provide power to a heater adjacent to a tip, the heater cartridge comprising:

a leading section having a channel between a tip and a pipe end;

an electrical cartridge having a contact end adapted to receive power; and

a transition section coupling the electrical cartridge to the leading section in a staggered manner with respect to each other, where the power received through the contact end is provided to a heater to convert the power to heat near the tip.

60. The heater cartridge according to claim 59, where at least a portion of the pipe end is enclosed with a conducting material to conduct heat from the heater to the pipe end.

61. The heater cartridge according to claim 59, where the transition section includes a first plate and a second plate with a gap therebetween, where the first plate is closer to the heater than the second plate and the gap insulates the second plate from the heater.

62. The heater cartridge according to claim 59, where the channel is substantially straight between the tip and the pipe end.

63. The heater cartridge according to claim 59, where the electrical cartridge is removable from the leading and transition sections so as to be replaceable.

64. The heater cartridge according to claim 59, where the tip is replaceable.

65. The heater cartridge according to claim 59, where the diameter of a channel within the tip is smaller than the diameter of the remainder of the channel.

66. The heater cartridge according to claim 59, where the transition section has a sleeve protruding from one side adapted to receive the electrical cartridge and the pipe end protruding from the same side of the transition section, where the sleeve protrudes further than the pipe end and the sleeve adapted to insert into a first handle through an opening to orient the heater cartridge relative to the first handle.

67. The heater cartridge according to claim 66, where the sleeve has a cavity adapted to engage with a hinge within the first handle.

68. A method for removing a melted solder into a solder storage, the method comprising:  
vacuuming the melted solder through a channel;  
maintaining a substantially constant temperature along channel;  
storing the melted solder into a storage.

69. The method according to claim 68, further including:  
replacing the storage.

70. The method according to claim 68, further including:



delaying the step of vacuuming until the step of maintaining the substantially similar temperature along the channel is achieved.

71. The method according to claim 68, further including:

delaying turning off the steps of vacuuming and maintaining until the channel is free of solder.

72. A method for operating a desoldering tool to remove melted solder through a channel from a tip end to a pipe end, the method comprising:

providing power to a heater to heat the channel; and

delaying providing an initial vacuum source through the channel to remove the melted solder until the heater heats the channel so that temperature along the channel can maintain the solder in a melted state to pass the solder from the tip end to the pipe end.

73. The method according to claim 72, further comprising:

delaying turning off the power to the heater and the vacuum source through the channel until the channel is substantially free of solder.

74. The method according to claim 72, where the step of delaying providing the initial vacuum source through the channel is between about 15 seconds and about 30 seconds.

75. The method according to claim 72, where the step of delaying turning off the power to the heater and the vacuum source through the channel is between about 15 seconds and about 30 seconds.

76. The method according to claim 72 further including:

monitoring the temperature of the tip end; and

providing power to the heater to maintain the temperature of the tip end near a predetermined temperature.

77. A desoldering tool comprising:

a desoldering tip having a desoldering channel;

a housing supporting the desoldering tip and operatively communicable with a vacuum source;

an exterior surface of the housing having a recess defining a solder collection storage cartridge cavity;

the cavity being adapted such that when a solder collection storage cartridge is operatively positioned in the cavity, the cartridge is communicable with the vacuum source to suck solder through the desoldering channel into the cartridge; and

the cavity being adapted to allow a cartridge to be directly inserted into and removed from the cavity without opening the housing.

78. The desoldering tool of claim 77, wherein the cavity is open to the atmosphere.

79. The desoldering tool of claim 77, further comprising a passage in the housing, a forward end of the passage communicating with a rearward end of a solder collection storage cartridge when in the cavity, and a rearward end of the passage communicable with the vacuum source, wherein longitudinal centerlines of the desoldering channel, the cartridge and the passage are aligned.

80. The desoldering tool of claim 77, wherein the cavity is at a forward top area of the housing.

81. A desoldering tool comprising:

a desoldering tip having a desoldering channel;

a first handle supporting the desoldering tip and adapted to couple to a vacuum source to withdraw melted solder through the desoldering channel;

a first actuator on the first handle and adapted to allow a user of the desoldering tool who is holding the first handle to control the communication of the vacuum source with the desoldering channel;

a second handle;

a second actuator on the second handle;

the second handle being adapted to couple to the first handle in a coupled position and to subsequently be uncoupled therefrom by a user; and

the second actuator when the second handle is in the coupled position being adapted to allow a user of the desoldering tool who is holding the second handle to control the communication of the vacuum source with the desoldering channel.

82. The desoldering tool of claim 81, wherein the first actuator is a user-actuable first trigger and the second actuator is a user-actuable second trigger.

83. The desoldering tool of claim 81, further comprising means for operatively connecting the second actuator to the first actuator when the second handle is in the coupled position.

84. The desoldering tool of claim 81, wherein the second handle forms a pistol grip handle and the second actuator forms a trigger on the pistol grip handle.

85. The desoldering tool of claim 81, further comprising a releasable locking means for locking the second handle to a bottom surface of the first handle in the coupled position.

86. A desoldering tool heater cartridge assembly unit, comprising:

a desoldering tool tip;

a heater cartridge positioned to heat solder in the desoldering tool tip;

the tool tip and the heater cartridge defining a solder suction channel having a longitudinal channel axis connectable to a vacuum source;

an elongate electrical cartridge having a longitudinal cartridge axis and connectable to an electrical power source;

the longitudinal cartridge axis being offset from and parallel to the longitudinal channel axis; and

a transition section electrically connecting the electrical cartridge to the heater cartridge.

87. The cartridge assembly unit of claim 86, wherein the transition section includes gap means defining a gap and electrical conductor wiring in the gap.

88. The cartridge assembly unit of claim 87, wherein the gap means includes a pair of plates disposed perpendicular to the cartridge axis and the channel axis.

89. The cartridge assembly unit of claim 86, wherein the heater cartridge surrounds a rearward portion of the desoldering tool tip.

90. The cartridge assembly unit of claim 86, further comprising a pipe extending rearwardly from the solder suction channel.

91. The cartridge assembly unit of claim 86, further comprising a sleeve surrounding a forward portion of the electrical cartridge.

92. A system for melting solder through a tip, the system comprising:

a first handle having a first trigger and a longitudinal axis, where activation of the first trigger provides power to the tip to melt solder; and

a second handle having a grip area with a second trigger, where the first and second handles are adapted to couple together such that the grip area of the second handle is tangential relative to the longitudinal axis of the first handle and activation of the second trigger causes activation of the first trigger to provide power to the tip.

93. The system according to claim 92, where the first handle is adapted to provide vacuum source to the tip to remove the melted solder through a channel within the tip.

94. The system according to claim 92, where the first handle is capable of operating independently from the second handle to provide power to the tip.